Introduction:
The driving pressure of respiratory system (DP) reflects the extent of lung stretch during tidal breathing, and has been associated with mortality in ARDS patients during controlled mechanical ventilation [1]. Aim of this study was to examine DP during assisted ventilation, and examine if and when high DP occurs in patients in assisted ventilation with PAV+.

Methods:
Critically ill patients hospitalized in the ICU of the University Hospital of Heraklion, on mechanical ventilation in PAV+ mode were studied. Continuous recordings of all ventilator parameters were obtained for up to three days using a dedicated software. DP was calculated from the PAV+ computed compliance (C) [2], and the measured exhaled tidal volume (VT, DP=VT/C). Periods of sustained DP above 15 cmH2O were identified, and ventilation and clinical variables were evaluated.

Results:
Sixty-two patients and 3200 hrs of ventilation were analyzed. In half of the patients, DP was lower than 12 cmH2O in 99% of the recording period, while high-DP (>15cmH2O) more than 10% of the total time was observed in 10% of patients. ICU non-survivors had more time with high DP than survivors (p=0.04). Periods of sustained high-DP (>15cmH2O for >1h) were observed in 9 patients. Level of assist, minute ventilation, and respiratory rate were not different between the periods of high DP and the complete recordings, while VT was higher and C was lower during the high-DP period compared to the complete recording. The median compliance was below 30 ml/cmH2O during the high-DP period, and above 50 ml/cmH2O during the complete recording.

Conclusion:
High DP is not common, but does occur during assisted ventilation, predominantly when compliance is below 30 ml/cmH2O, and may be associated with adverse outcome.

References: